ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP PROGRAM
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL

PROJECT INFORMATION

Project Title: Painted Cave Water Project – Phase 2	**Project No. 09-521**
Region/GMU: 5/31	**HPC: Tucson and Safford**

Project Type: Water Development

Project Description:
This project will provide perennial water to approximately 5,100 acres of upland located on the north rim of the Aravaipa Canyon. The system has been engineered to provide 5,000 gallons per day to multiple troughs (6) and storage tanks. The system will improve livestock utilization of the BLM Painted Cave allotments and reduce overgrazing in areas around existing water sources, namely riparian areas. This project will benefit existing populations of desert bighorn sheep, mule deer, Coues' deer and javelina by addressing the greatest limiting factor in the area, water. Wildlife populations will likely increase as a result of this project.

The project will be constructed in phases. These phases will begin with the installation of a submersible solar pumping station which will pump water from an existing 400 gallon per minute well located along Aravaipa Creek into an initial pumping storage tank. Additional surface pumps will pump water to Round Cement storage tank located on the map due west of Painted Cave Ranch at the tee in the main line. Transfer pumps will then deliver water to the Horseshoe storage tank and drinker and eventually to Black tank located in the headwaters of Buzan Canyon. To the east from Round Cement storage tank, water will be pumped to four different drinkers eventually ending on the west edge of Javelina Canyon. Approximately 8.5 miles of pipe will be installed. **Phase one is complete – please see the email from Langdon under the Project Strategies section.**

This cooperative project has considerable cost share. Cooperators include the NRCS Tucson office, BLM Safford Office, landowner and operator Langdon Hill, and AGFD. All environmental compliance will be completed by the BLM. The project is scheduled to begin by January 2009. The NRCS EQUIP grant has already been approved and funds dedicated. **The AGFD match ratio for this project is greater than 10:1 per phase and 6.9:1 overall.**

Wildlife Species to Benefit: bighorn sheep, mule deer, Coues' deer, javelina, small game and nongame

Possible Funding Partners:

Implementation Schedule: **Beginning: September 1, 2008** **Completed: June 30, 2013**	**NEPA Compliance: (if applicable)** **Completed: Yes __X__ No ____** **Projected Completion Date:**

PROJECT FUNDING

SBG Funds Requested: $10,000 total for Phase 2

Cost Share Funds: $117,835

Total Project Costs: $137,402

PARTICIPANT INFORMATION	
Applicant: Ben Brochu **Telephone: (520) 229-3222**	**Address:** Arizona Game and Fish Department 555 N. Greasewood Road Tucson, AZ 85745
AGFD Contact and Phone No. **(If applicant is not AGFD personnel)**	
Coordinated with: Amy Humphrey (BLM) and Katie Cline (NRCS)	**Date: Ongoing**
Applicant's signature:	**Date:**

SEND COMPLETED APPLICATIONS TO:
Game Branch
2221 W. Greenway Rd.
Phoenix, AZ 85023
rothompson@azgfd.gov

WAS PROJECT PRESENTED TO THE LOCAL HPC? YES __X____ NO _____

HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED?
Yes, the project was submitted and phase one was funded last year.

NEED STATEMENT/PROBLEM ANALYSIS:
Historically, the Aravaipa area once supported a healthy population of desert bighorn sheep. Due to uncontrolled land use practices, these native sheep were extirpated in the 1930's. In 1973, 22 bighorn sheep (15 adults and 7 lambs) were released from an enclosure on the edge of Aravaipa Canyon. The population grew quickly and by 1982 was estimated to contain over 100 animals. In October, 2006 the AGFD observed 83 sheep and estimated the population to be approximately 100 animals. The Aravaipa Canyon herd is currently considered one of the best sheep herds in the state. The AGFD currently offers two hunting tags in the area which are highly sought after.

Aravaipa creek is the only perennial source of water in the area. In upland areas which support mule deer, Coues' deer and javelina in addition to bighorn sheep, perennial water is scarce. It is difficult for species such as mule deer and javelina to traverse the steep canyons to access water in the creek. The development of water within the upland areas as described in this proposal is expected to greatly benefit wildlife. Populations of sheep, deer and javelina are expected to increase with the addition of water into this area.

The development of water within this area is also expected to reduce the risk of disease transmission with domestic sheep along the Aravaipa Creek road. A local resident who lives along the creek has a herd of approximately 30 domestic Navajo-Churro sheep. The domestic sheep are enclosed behind a 5-strand electric fence; however, the potential for nose-to-nose contact through the fence still exists. The redevelopment of Brandenburg and Buzan catchments, completed in March of 2008, partially addressed this issue by providing perennial water high on surrounding mountains. It is our hope that the bighorn sheep will

be less likely to seek water along the creek in close proximity to the domestic sheep if there is water in higher terrains. This project further addresses this issue by expanding water sources in the surrounding area to the north and east. Upon completion of this project, water will no longer be a limiting factor to wildlife populations, especially bighorn sheep, along the north rim of Aravaipa from Horse Camp Canyon west. There is also the potential to supply a tertiary water source off of the proposed pipeline to Buzan catchment should an emergency arise.

In the Silverbell Mountains, the disease outbreak in 2003 and 2004 resulted in a loss of approximately 30+ animals, 25% of the population. The diseases, infectious keratoconjunctivitis and contagious ecthyma, which were transmitted from domestic sheep, caused blindness and skin lesions and predisposed the bighorn sheep to other mortality factors. An outbreak similar to this in the Aravaipa herd would be devastating. Topography and terrain in Aravaipa would make treatment capture efforts extremely difficult and costly.

PROJECT OBJECTIVES:

- To reduce the risk of disease transmission from domestic sheep along Aravaipa Creek
- To increase populations of bighorn sheep, deer and javelina in this area by providing permanent long-term water sources for these species
- To improve the utilization of the BLM grazing allotments along the north rim of Aravaipa
- To improve landowner relations

PROJECT STRATEGIES:

The project will be constructed in phases. These phases will begin with the installation of a submersible solar pumping station which will pump water from an existing 400 gallon per minute well located along Aravaipa Creek into an initial pumping storage tank. Additional surface pumps will pump water to Round Cement storage tank located on the map due west of Painted Cave Ranch at the tee in the main line. Transfer pumps will then deliver water to the Horseshoe storage tank and drinker and eventually to Black tank located in the headwaters of Buzan Canyon. To the east from Round Cement storage tank, water will be pumped to four different drinkers eventually ending on the west edge of Javelina Canyon. Approximately 8.5 miles of pipe will be installed. See the map and itemized project details on the next three pages.

Following is an email from Langdon on the status of the project thus far:

RE: Whitaker and Painted Cave Grazing Allotments water distribution improvement and harvest systems.

Dear Arizona Game and Fish Department, the work that we have done at the ranch included the preliminary work for the water distribution system and maintenance of dirt tanks and repair of open to wildlife drinkers. The general plan of this improvement is to install a 20- 25 kilowatt solar array system to provide additional waters throughout the Panted Cave and Whitaker grazing allotments. This project includes preparing the areas for the array installation, the areas for the supplemental pumping stations, and the preparations for burying the HDPE pipe. By running the pipe along the existing dirt roads, we will be able to bury it and reduce the water temperature at the drinkers. It is important that as much of the pipeline be buried so that it is kept cool and thereby providing wildlife and grazing livestock water that is not heated from above ground installation.

Project scope.

1. Site preparation for the PV Array installation. We leveled the array location and made an access road to the 2 acre area where we are installing the photovoltaic array and inverter system. This area is located on the bluff just south west of the Cannery building.

2. We moved and removed much of the Malapai rock material along the road that travels from the Cannery building to the following tanks.

The purpose of first removing the malapai rock material is so that we can run a trencher along the side of the roads for the installation of buried HDPE pipe lines. The road preparations were done in the following areas.

Road to Round Cement Tank
Road to Horseshoe Tank
Road to Big Tank
Partial road to Black Tank
Road to Red Tank
Road to Javelina Tank

3. Restoration work on existing dirt tanks. All of the grazing allotment's dirt tanks have been filled with silt. We have removed many tons of the silt and in most cases we have increased the tanks overall depth while retaining their existing perimeter dimensions. The hole in Black tank was repaired. The spillway in Red tank was also repaired. Big tank was cleaned out to a level of 12- to 15 feet. Javelina tank was cleaned out to 20 feet. These tanks should now be able to endure drought as their depth will accommodate the 7 feet of evaporative loss Arizona waters have each year.

Our net objective is to produce a region that has abundant waters both from solar pumping stations and from enhanced catchments. The solar pumping systems will also include lines to assist the existing catchments with solar water during drought periods.

4. Trough and water restoration.

4.1 We have water now running to the two troughs at Round Cement – these troughs are on both sides of the fence lines. (Not that deer or other wildlife care about fences)

4.2 We have water running to Black Square Tank and its adjoining open trough.

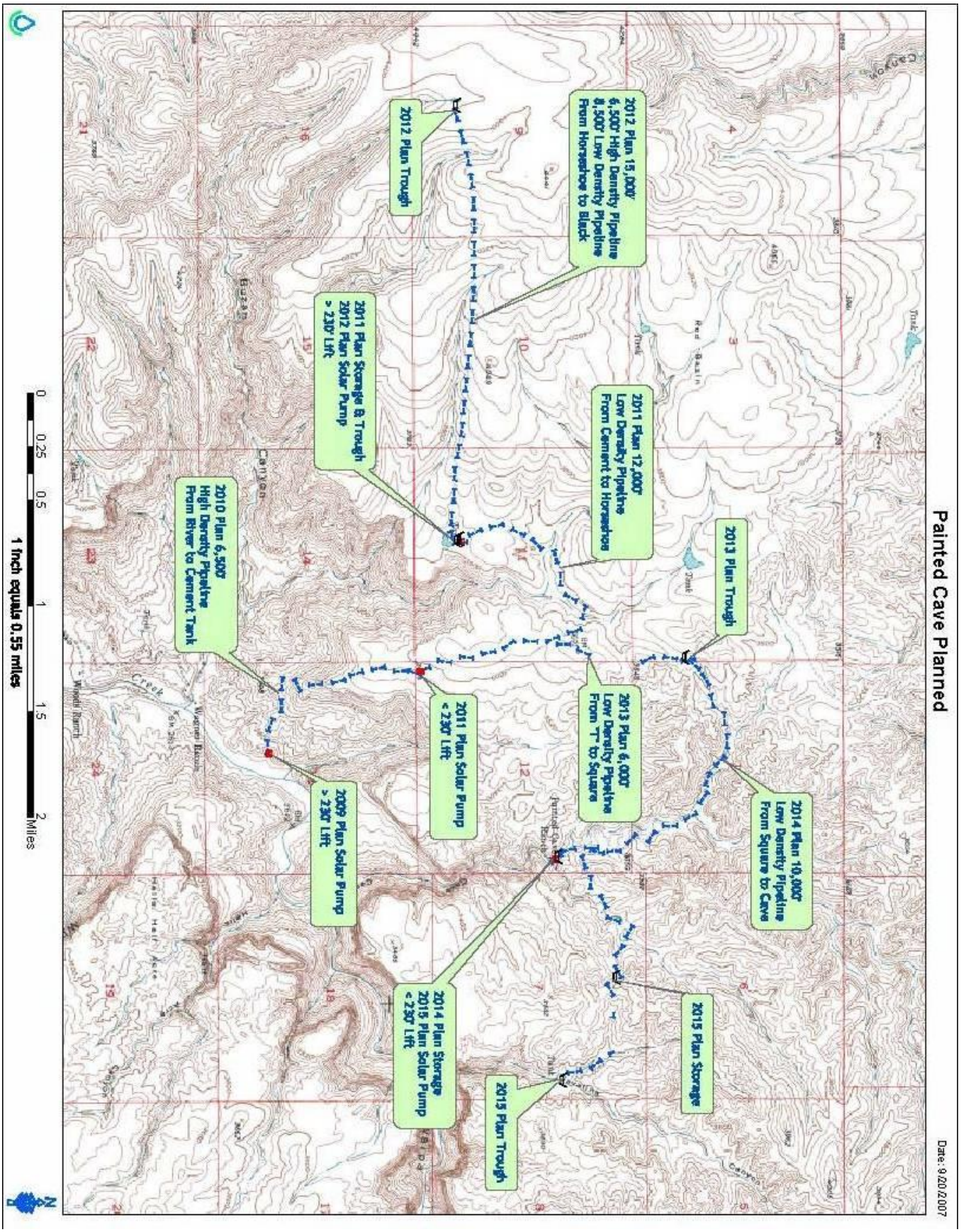
4.3 We have water running to Horseshoe.

Please let me know if you need any additional site preparation work information.

Langdon Hill
Porter House Station
92954 E. Aravaipa Rd.
Winkelman AZ 85292
520 357 6000

Post Address

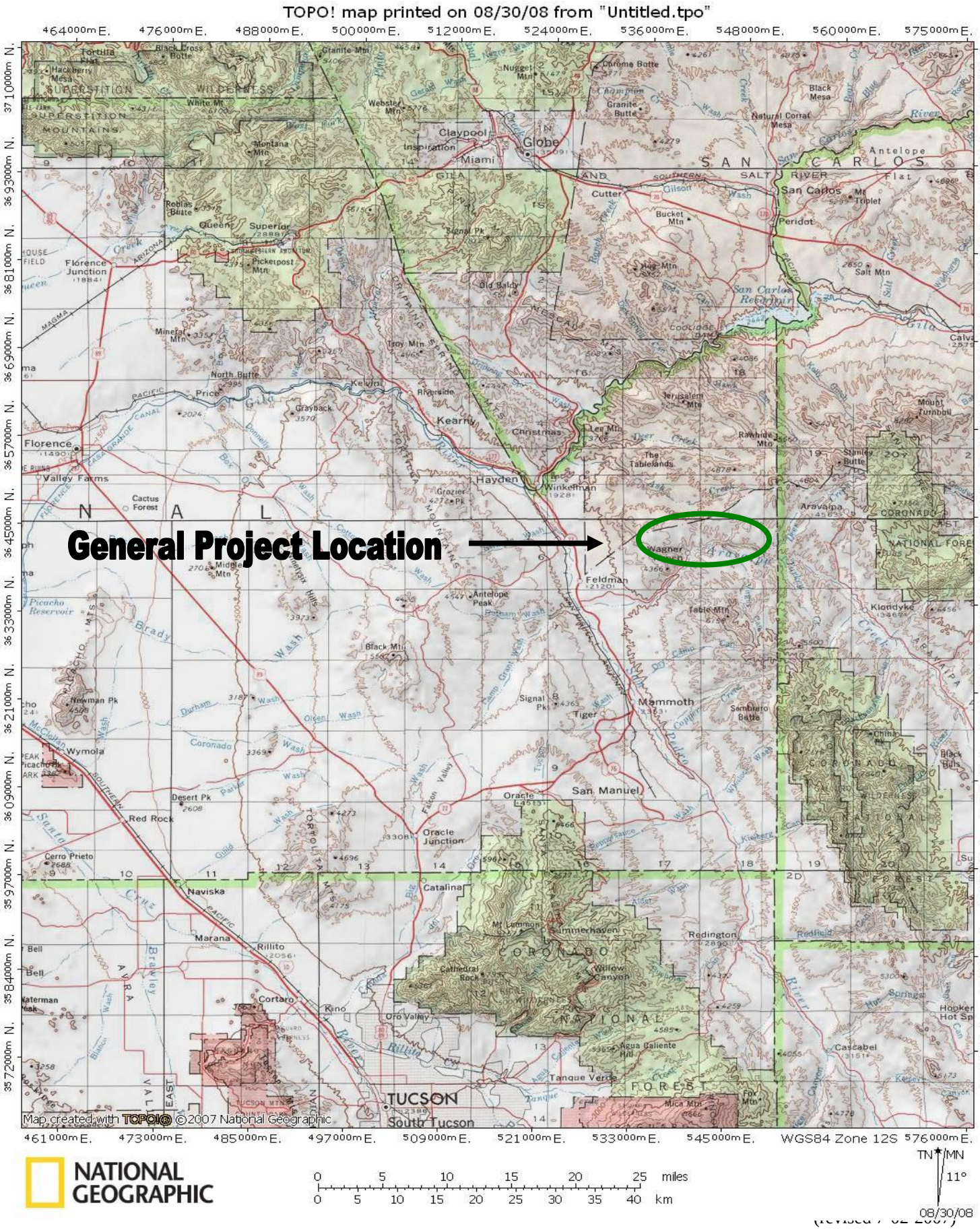
Porter House Station
Box 228
Tucson Arizona 85702
520 882 5020


Painted Cave Planned
2012 Plan 15,000' 6,500' High Density Pipeline 8,500' Low Density Pipeline From Horseshoe to Black
2012 Plan Trough
2011 Plan 12,000' Low Density Pipeline From Cement to Horseshoe
2011 Plan Storage & Trough 2012 Plan Solar Pump > 230' Lift
2013 Plan Trough
2013 Plan 6,000' Low Density Pipeline From "T" to Square
2014 Plan 10,000' Low Density Pipeline From Square to Cave
2011 Plan Solar Pump < 230' Lift
2010 Plan 6,500' High Density Pipeline From River to Cement Tank
2009 Plan Solar Pump > 230' Lift
2014 Plan Storage 2015 Plan Solar Pump < 230' Lift
2015 Plan Storage
2015 Plan Trough
0 0.25 0.5 1 1.5 2 Miles
1 inch equals 0.55 miles
Date: 9/20/2007

Painted Cave Planned Projects and Details 2008

			90% cost share
2009	> 230' Lift solar pump plant from River Well to Cement Tank	$ 10,500.00	$ 12,600.00
	lift = River 2679'		
	Cement 3555'		
	Total 876'		
	Static pressure = 379 psi		
2010	Pipeline from River to Cement Tank		
	6,500' High Density @ $3.00/ft	$ 19,500.00	$ 23,400.00
2011	Pipeline from Cement to Horseshoe		
	lift = Cement 3555'		
	Horseshoe 3630'		
	Total 75'		
	Static pressure = 32 psi		
	12,000' Low Density @ $1.13/ft	$ 13,560.00	$ 16,272.00
	Solar Pump < 230' (good for both Horseshoe and Square)	$ 4,500.00	$ 5,400.00
	3,000 gal storage @ $1.32/gal	$ 3,960.00	$ 4,752.00
	500 gal cement trough (site built) @ $1.88/gal	$ 940.00	$ 1,128.00
2012	Pipeline from Horseshoe to Black		
	lift = Horseshoe 3630'		
	Black 4403'		
	Total 773'		
	Static pressure = 335 psi		
	6,500' High Density @ $3/ft	$ 19,500.00	$ 23,400.00
	5,500' Low Density @ $1.13/ft	$ 6,215.00	$ 7,458.00
	Solar Pump > 230'	$ 10,500.00	$ 12,600.00
	500 gal cement trough (site built) @ $1.88/gal	$ 940.00	$ 1,128.00
2013	Pipeline from "T" to Square Tank		
	lift = Cement 3555'		
	Square 3665'		
	Total 110'		
	Static pressure = 48 psi		
	6,000' Low Density @ $1.13/ft	$ 6,780.00	$ 8,136.00
	500 gal cement trough (site built) @ $1.88/gal	$ 940.00	$ 1,128.00
2012-2013	Prescribed Grazing for Pastures 1 & 2		
	$2/ac not to exceed $10,000	$ 20,000.00	$ 20,000.00
TOTAL		$ 117,835.00	$ 137,402.00

PROJECT LOCATION:
Game management unit 31
See map on next page.


TOPO! map printed on 08/30/08 from "Untitled.tpo"
General Project Location
Map created with TOPO! ©2007 National Geographic
NATIONAL GEOGRAPHIC
WGS84 Zone 12S
TN MN
11°
08/30/08

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):

- The majority of the project is located on land administered by the Bureau of Land Management - Safford Field Office.

  Safford Field Office
  711 4th Avenue
  Safford, AZ 85546
  928-348-4400
  Fax: 928-348-4450

- The source well and first 1.5 miles of pipe is located on private property owned by Langdon Hill, Porter House Station, LLC. owner and operator

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?
A stewardship agreement with Langdon Hill has been completed.

HABITAT DESCRIPTION:
The project site is located in Pinal County, Arizona, southeast of Phoenix. The project site is best characterized by the Semidesert Grassland community. This grassland is dominated by perennial bunchgrasses (*Aristida* spp., *Bouteloua* spp., and *Trichachne* spp.) and shrubs including mesquite (*Prosopis juliflora*), whitethorn acacia (*Acacia constricta*), prickly pear cactus (*Opuntia phaecantha* var. *discata*), and soaptree yucca (*Yucca elata*). Average rainfall is approximately 12" and elevation ranges from approximately 2600' to 3500'.

ITEMIZED USE OF FUNDS:

- The NRCS has funded 90% of the total project for the amount of $117,835.
- The proposed AGFD cost share is broken down into two phases:

  Phase 1 – 2009 to 2010 $10,000 – **Funded last year**
  Phase 2 – 2010 to 2012 $10,000

- See below for an itemized list by year of associated project phases and components.

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LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

- NRCS – Funded 90% of the project through an EQUIP grant
- BLM – Safford Office – Complete the environmental compliance associated with the project
- Langdon Hill – Oversee the project and install all of the components
- AGFD – provide funding for project components
- Volunteers – local sportsmen may be solicited to help with the installation of the project components
- Arizona Desert Bighorn Sheep Society – tag fund funding and volunteer labor
- Arizona Deer Association – tag fund funding and volunteer labor
- Mule Deer Foundation – tag fund funding and volunteer labor
- Safari Club International – potential banquet funding (if needed) and volunteer labor
- 123 Go… - youth volunteer opportunities

PROJECT MONITORING PLAN:
This project will be monitored by the operator Langdon Hill.

PROJECT MAINTENANCE:
This project will be maintained by the operator Langdon Hill.

PROJECT COMPLETION REPORT TO BE FILED BY:
If needed - Ben Brochu

WATER DEVELOPMENT PROJECTS (see attached worksheet):

TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):

ARIZONA GAME AND FISH DEPARTMENT
WATER DEVELOPMENT WORKSHEET

PROJECT NAME: Painted Cave Water Project – North Rim of Aravaipa

1) Is the water development listed as a priority in the most recent "Wildlife Water Development Annual Implementation Schedule?"
Yes

2) Please list the Development Branch personnel and date coordinated with for this project.
This is an NRCS cost share project. Coordination with Development Branch is not required per Joe Currie.

3) What is the estimated annual inches of precipitation for the area? (mark one)
___2-4 ___4-6 ___6-8 ___8-10 ___10-12 __X_12-14 ___14-16 ___>16

4) Is there a perennial water source available to big game within four miles of this project?
_X__YES (please complete #5 below) ___NO (skip #5 below**)**

5) For the accessible, perennial water source nearest this project:
Name of water source: Buzan and Brandenburg catchments, Aravaipa Creek
Type of water source (catchment, spring, dirt tank, etc.): Catchments and perennial creek
Ownership of water source: AGFD for catchments and BLM for creek
Distance in miles from project: less than 4 miles – varies, approximately 2.1 miles from Brandenburg catchment

6) Is the target wildlife species a result of transplant efforts? _X__YES ___NO
Desert Bighorn Sheep

7) Please list any special land management status for the project site (i.e. Wilderness, National Park, National Monument, etc). If private land, list landowner.
BLM land and private owned by Langdon Hill

8) Please provide the following information about access to the proposed site:
Type of access (mark one): ___2x4 vehicles __X_4x4 only ___foot only**
**If foot access only: Distance in miles: Approx. hiking time:

-- Does access to this site require crossing private or tribal lands? __X_YES ___NO

-- Please describe any restrictions to public access:
Open to public recreation through a sign in box which may eventually become some type of pre-registration system via email or phone for access. Owner Langdon Hill has made numerous statements that he has no intention of completely restricting public access and would like to work with sportsmen and the AGFD to develop some type of sign in procedure which will make potential users more accountable and discourage poor behavior and misconduct.

9) Please list below (or on a separate sheet) the <u>material type and dimensions</u> of each component proposed to be added, modified, or repaired.

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10) Was a site visit completed? ___ Yes ___No

This is an NRCS cost share project. A site visit with Development Branch is not required per Joe Currie.